# PCR Preview Unit / Console S51

## 4512 201 03611

# Level 0 Documentation
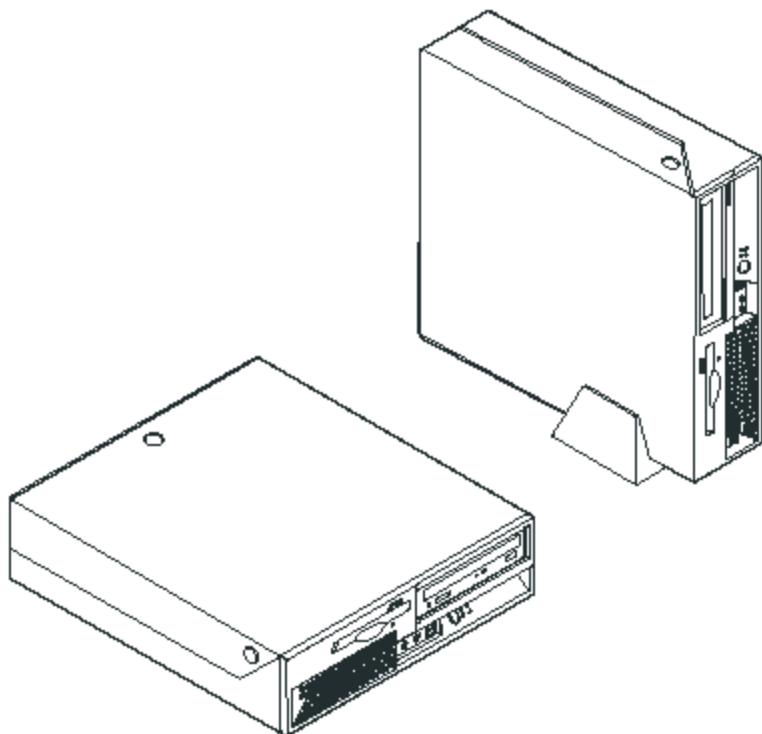


*) This manual contains parts of the original IBM documentation downloadable from the IBM Internet side.

The copyrights have been given by IBM Deutschland GmbH.

Printed in Hamburg, Germany

***Proprietary Notice:***

*This document and the information contained in it is proprietary and confidential information of Philips Medical Systems ("Philips") and may not be reproduced, copied in whole or in part, adapted, modified, disclosed to others, or disseminated without the prior written permission of the Philips Legal Department. Use of this document and the information contained in it is strictly reserved for current Philips personnel and Philips customers who have a current and valid license from Philips for use by the customer's designated in-house service employee on equipment located at the customer's designated site. Use of this document by unauthorized persons is strictly prohibited. Report violation of these requirements to the Philips Legal Department. This document must be returned to Philips when the user is no longer licensed and in any event upon Philips' first written request.*

***Warranty Disclaimer Language:***

*Philips provides this DOCUMENT without warranty of any kind, implied or expressed, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose.*

***Limitations of Liability Language:***

*Philips has taken care to ensure the accuracy of this document. However, Philips assumes no liability for errors or omissions and reserves the right to make changes without further notice to any products herein to improve reliability, function, or design. Philips may make improvements or changes in the product(s) or program(s) described in this document at any time.*

CSIP Level 0 (05.0) 4512 988 00661 REV AA

**SERVICE MANUAL - UNIT**
**732**

**PCR Preview Unit/ Console S51**
**4512 201 03611**                                                        Author: B. Freytag

In case there are any questions concerning this manual,
please, send this LOPAD via fax to +49/(0)40/5078 2481

File:  PCR_Prev unit_00661AA

---

**List of pages and drawings (LOPAD)**                    **Manual Order No.: 4512 988 00661**
                                                                              **released 09/2005**

1 ... 17                    (05.0)

# Contents

# 1. INTRODUCTION AND TECHNICAL DATA

## 1.1 GENERAL USE

This manual covers a PC which is used for the following components of a PCR system:
- Preview Unit of the PCR Compano, PCR CosimaX and PCR Corado systems
- Console of the PCR Compano S system
- USIT PC of the PCR User Terminal (basic and additional terminal)
- PCR Eleva Workspot

**Functionality of the Preview Unit:**
- Reader control
- Preprocessing of the images (EDR)
- Image data compression
- Preview of the images
- Temporary storage of images
- DICOM output to EasyVision RAD

**Functionality of the Console Compano S/ PCR Eleva Workspot:**
- Reader control
- Image processing
- Image data compression
- Preview of the images
- Direct patient data input
- Routing of patient data and images between server and clients (PCR Eleva only)
- DICOM/ WLM RIS interface
- DICOM output to printer / archive / viewing station

**Functionality of the USIT PC:**
- Control of the operation panel
- Patient data handling including RIS interface (option) and/ or DICOM/ WLM- RIS interface (option)
- IDT interface of the reader (some patient data and the MRM codes)
- Service terminal of AC3 reader

There are two types of PCR User Terminals consisting of the PC and the PCR Terminal Display:
- Basic Terminal    (belongs to a basic PCR system, single terminal installation)
- Additional Terminal   (for multi terminal / multi reader installation)

A  **single terminal installation**  contains just one USIT. The USIT has to be configured as server.

In a  **multi terminal / multi reader installation**  there may be up to 7 Client and / or Reader USITS connected via Ethernet to one Server USIT.

The server holds the patient database and shares it with the clients. The server is the only USIT to receive RIS data.

## 1.2 TECHNICAL DATA

Type:                       IBM ThinkCentre S51, type 8171


Dimensions:                 85 mm x 310 mm x 358 mm  (H x W x D)

                            approx. 8 kg


Environment:

Air temperature:

- System on:                10° ... 35° C

- System off:               10° ... 43° C


Humidity:                   8 ... 80 %


Electrical Input:

Switchable range:           115V  and  230V

Low range (115V):           90 ... 137 V ac, 57 ... 63 Hz

High range (230V):          180 ... 265 V ac, 47 ... 53 Hz

                            approx. 0.1 kVA


Heat output:                approx. 350 Btu/hr


Acoustical noise-emission:  31 ... 34 dBA   (0.5 m)


Features:                   - Intel$^®$ Pentium™ 4 processor, min. 3.2 GHz

                            - min. 2 x 512 MB system memory

                             **(must be reduced to 1 x 512 MB for the use as USIT!)**

                            - IDE CD-ROM drive

                            - 3.5" 1.44MB diskette drive

                            - Hard disk drive, min. 40 GB

                            - Integrated 10/100/1000 Mbps Ethernet


Operating system:           - Windows 2000 $^®$ pro        (Preview Unit and Console Compano S)

                            - Windows XPe $^®$              (PCR Eleva Workspot)

                            - OS/2                         (USIT PC)

CSIP Level 0 (05.0)

## 1.3 COMPATIBILITY

| | | |
|---|---|---|
| OS Recovery CD W2k S51 | | 4512 116 0750x |
| OS Recovery CD WXPe M42/S51 | | 4512 116 0810x |
| PCR Preview Unit SW | | 4512 201 0140x |
| PCR Compano S SW | | 4512 201 0142x |
| PCR User Terminal SW, Rel. 1.5L4 and higher | ≥ | 4512 201 01134 |
| RIS Option, Rel. 1.5L4 and higher | ≥ | 4512 201 01144 |
| DICOM/ WLM- RIS Option, Rel. 1.5L4 and higher | ≥ | 4512 201 01054 |
| PCR Eleva Application SW | | 4512 201 0370x |
| | | |
| PCR Terminal Display | | 4512 201 0171x |
| PCR Corado Reader | | 4512 201 0267x |
| PCR CosimaX Reader | | 4512 201 0264x |
| PCR Compano Reader | | 4512 201 0100x |
| PCR Cosima Reader | | 4512 201 0196x |
| AC 500 Reader | | 9848 600 0250x |
| AC 5000 Reader | | 9848 600 0211x |
| AC 3 Reader | | 9896 010 1030x |
| AC 3000 Reader | | 9848 600 0034x |
| PCR 9000 Reader | | 9896 010 1029x |

## 1.4 SCOPE OF DELIVERY

- IBM ThinkCentre S51, type 8171

- Mouse

- Keyboard, US English

- 3 x Power cable (Europe, USA)

- 1 x Serial cable, 5 m  (Nullmodem)

- 3 x Patch cable RJ45 - RJ45, CAT5, 3 m

- 2 x IBM installation instructions (english)

- Questionnaire for ordering a new license file for the application software  (for PCR Eleva only)

Software and licenses for Windows 2000 ® pro  or  Windows XPe ® pro or OS/2 are delivered separately depending on the application.

The monitor used for the Preview Unit, the Console Compano S or the Console PCR Eleva is delivered with a manual of the manufacturer.

Optional keyboards:
- 4512 201 04001  Keyboard  FR
- 4512 201 04011  Keyboard  DE
- 4512 201 04021  Keyboard  ES
- 4512 201 04031  Keyboard  IT
- 4512 201 04041  Keyboard  NL
- 4512 201 04051  Keyboard  DK
- 4512 201 04061  Keyboard  SE
- 4512 201 04071  Keyboard  NO

## 2. INSTALLATION

### 2.1 HARDWARE

For installing the PC itself please observe also the original IBM installation instructions delivered with the PC.

1 - Power cord connector
2 - Cable lock latch
3 - Rope clip holes
4 - DVI-D Connection Adapter
5 - Serial connectors (lower = COM 1)
6 - Ethernet connector
7 - USB connectors (2)
8 - VGA monitor connector
9 - Parallel connector
10- Audio line-in connector
11- Audio line-out connector
12- USB connectors (4)
13- PS/2 keyboard connector
14- PS/2 mouse connector
15- LEDs
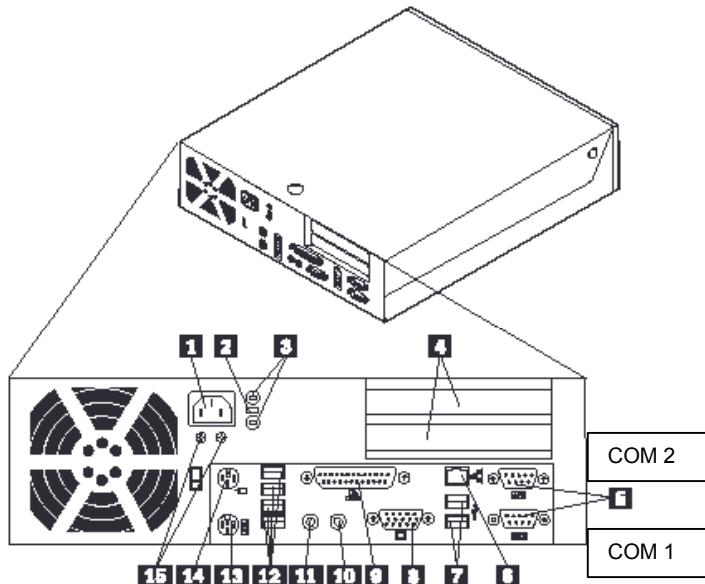
### 2.1.1 Checking the Power Cords

In some cases, the power cord supplied with this system may not be compatible with the AC wall outlet in your country. If this is true, you must obtain a suitable power cord that meets the following criteria:

- The cord must be rated for use at the AC voltage available, with a current rating that is at least 125% of the current  rating of the product.
- The AC plug end must be terminated in a grounding–type male plug designed for use in your country.
  The cord must be labeled or marked to indicate it has been certified by an agency acceptable in your country.
- The connector at the product end must be an EN60320 female connector (or the equivalent IEC 320 connector,  sheets C13-14).
- The cord must be less than 4.5 m (14.8 feet) long and be created with <HAR> (harmonized) cordage.

### 2.1.1. Input Voltage Selection

- Select the AC input voltage range:   115 V  or  230 V        (default: 230 V)

### 2.1.2. Wiring when using the PC as PCR Preview Unit

- Connect mouse and keyboard.
- Connect the RS232 cable (Nullmodem) to the COM1 ports of this PC and to the one of the PCR User Terminal.
- Connect the cable of the VGA monitor.
- If applicable, connect the RS232 or USB cable of the touch screen monitor to COM2 respectively to the USB port.
- Connect the patch cable to the network. During setting-to-work a separate switch or hub should be used.
- Connect the power supply cable.

**Recommendation:** Separate the Reader and the Preview Unit from the other network traffic by using the second network port of the EasyVision RAD. Then the default IP addresses 172.16.1.10 / 20 / 30 can be used.

### 2.1.3. Wiring when using the PC as Console Compano S/ PCR Eleva Workspot

- Connect mouse and either standard (US) or a country specific keyboard.
- Connect the cable of the VGA monitor.
- If applicable, connect the RS232 or USB cable of the touch screen monitor to COM1 respectively to the USB port.
- PCR Eleva only: Connect the USB barcode scanner to an USB port (rear 4-port block or front 2-port block).
- Connect the patch cable to the network. During setting-to-work a separate switch is recommended.
- Connect the power supply cable.

### 2.1.4. Wiring when using the PC as USIT
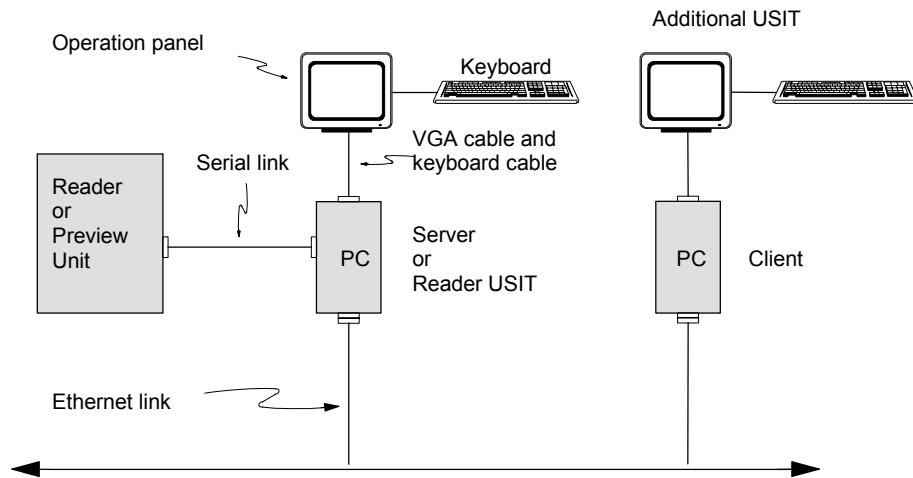


- **Remove the outer memory module according to chapter "4.2 De-installing memory"!**
- Connect the VGA cable of the operation panel.
- Connect the keyboard cable of the operation panel.
- If applicable, connect the USB barcode scanner to an USB port (rear 4-port block or front 2-port block).
- If applicable, connect the USB keyboard to an USB port (rear 4-port block or front 2-port block).
- Connect the RS232 interface cable of the Reader respectively the Preview Unit to the COM1 port when used as Server or Reader USIT.
- Connect the patch cable to the network.
- Connect the power supply cable according to the following information:

If used as Server or Reader USIT and the reader is connected via the serial link both units must be connected to the same phase of the power supply.

To guarantee this the USIT PC can also be connected with the aid of the 15 m long power cable at the power terminal of the reader, e.g. the AC500 shown in the following figure.
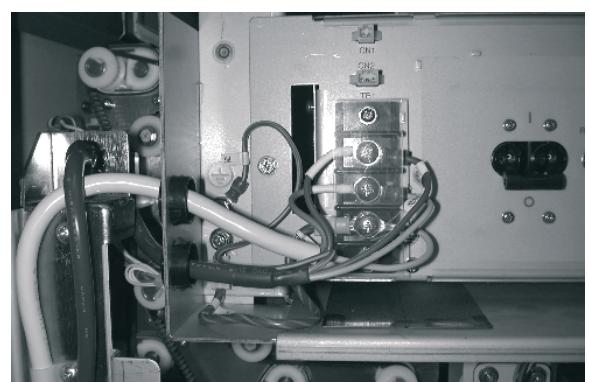
## 2.2 SOFTWARE

Depending on the usage different software packages have to be loaded into the PC.

Please refer to the Release Bulletins delivered with the respective system.

As USIT at least the release 1.5L4 is needed.

In all other applications a special OS Recovery CD is needed running on this type of PC only.

The license (OS/2 or Windows ®) and the license sticker (for Windows ® only) of the used operating system are filed into the CE folder delivered with each PCR system.

# 3. FAULTFINDING

## 3.1 FAULT FINDING STRATEGY

Hardware defects of the computer are indicated:
- by two status LEDs at the rear side
- with a series of beep codes
- by BIOS error codes (POST error messages)

For further information, please refer to the IBM documentation delivered as PDF file on the CD PCR Compano Systems or use the IBM support via Internet.
- Hardware Maintenance Manual
- http://www.pc.ibm.com

For faults caused by the software see the corresponding Release Bulletin.

## 3.2 CHECKOUT BY USING THE LEDs

After power-on the PC the LEDs at the rear side indicate the following states:

| Power LED | Green diagnostic LED | Yellow diagnostic LED | Action |
|---|---|---|---|
| ON | ON | OFF | This is the normal condition of the LEDs when the power is ok. |
| OFF | OFF | OFF | Make sure the power cord is attached to a working electrical outlet.<br><br>If the electrical outlet is ok, replace the power supply. |
| OFF (after the power button has been pressed) | ON | OFF | Replace the system board |
| ON | ON | ON | Replace the power supply |

CSIP Level 0 (05.0)

## 3.3 BEEP CODES

Beep symptoms are short tones or a series of short tones separated by pauses
(intervals without sound). To activate this mode the Power-On Self-Test must be set to 'Enhanced' in the BIOS.

| Beeps | Description |
|---|---|
| 1-2-X | + One beep <br> + A pause (or break) <br> + Two beeps <br> + A pause (or break) <br> + Any number of breaks |
| 4 | Four continuous beeps |

**Beep Symptom:**                          **FRU/Action:**

**1-1-3**                                     1. **Run Setup**
CMOS read-write error                      2. System Board

**1-2-2-3**                                   1. **System Board**
ROM BIOS check error

**1-2-1**                                     1. **System Board**
Programmable Interval Timer failed

**1-2-2**                                     1. **System Board**
DMA Initialization failed

**1-2-3**                                     1. **System Board**
DMA page register write/read failed

**1-2-4**                                     1. **Memory module**
RAM refresh verification failed            2. System Board

**1-3-3-1**                                   1. **Memory module**
1st 64K RAM test failed                    2. System Board

**1-3-2**                                     1. **Memory module**
1st 64K RAM parity test failed             2. Processor
                                           3. System Board

**2-2-3-1**                                   1. **System Board**
Interrupt vector loading test failed

**2-1-1**                                     1. **System Board**
Secondary DMA register failed

**2-1-2**                                     1. **System Board**
Primary DMA register failed

**2-1-3**                                     1. **System Board**
Primary interrupt mask register failed

**2-1-4**                                     1. **System Board**
Secondary interrupt mask register failed

**2-2-1**                                     1. **System Board**
Interrupt vector loading failed

**1-3-1-3**                                   1. **System Board**
Keyboard controller failed                 2. Keyboard

| | | |
|---|---|---|
| **2-2-3**<br>CMOS power failure and checksum checks failed | 1.<br>2. | **Battery**<br>System Board |
| **2-2-4**<br>CMOS configuration info validation failed | 1.<br>2. | **Battery**<br>System Board |
| **2-3-1**<br>Screen initialization failed | 1.<br>2. | **Jumper on J28**<br>System Board |
| **2-3-2**<br>Screen memory failed | 1. | **System Board** |
| **2-3-3**<br>Screen retrace failed | 1. | **System Board** |
| **1-2**<br>Search for video ROM failed | 1. | **System Board** |
| All other beep code sequences | 1. | **System Board** |
| Continuous beep | 1. | **System Board** |
| Repeating short beeps | 1.<br>2.<br>3. | **Keyboard stuck key**<br>Keyboard Cable<br>System Board |

## 3.4  POST ERROR MESSAGES

Please refer to the Hardware Maintenance Manual of IBM, chapter Symptom-to-FRU Index.

To activate this error indication the Power-On Self-Test must be set to 'Enhanced' in the BIOS.

# 4. REPLACEMENTS

## 4.1 GENERAL

It is recommended to exchange the complete PC.
A repair of a PC is limited to the replacement of the following parts:
- Hard disk drive
- CD- ROM
- Floppy drive
- RAM

For further information refer to the IBM Hardware Maintenance Manual (www.pc.ibm.com).

**Before you begin:**
- Consider the safety information of the IBM Hardware Maintenance Manual.
- Shut down the operating system, remove any media, and turn off all attached devices and the computer.
- Unplug the power cords and all other cables.

**Cover removal:**

Press inward on the two buttons and rotate the top cover upward as illustrated.
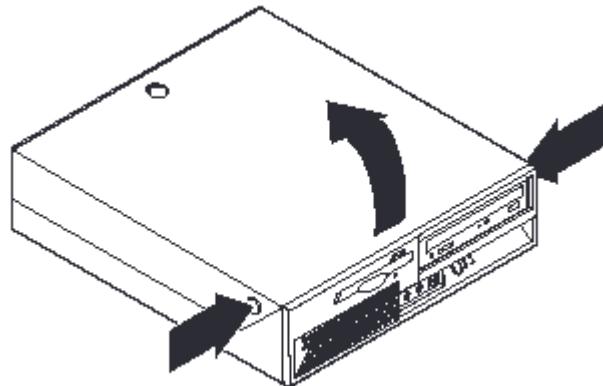
**Note:**

*If the PC to be replaced is used as Preview Unit or Console Compano S/Console PCR Eleva it has Windows 2000 ® respectively Windows XPe ® as operating system.*

*The **license** and the **license sticker** are filed into the CE folder delivered with each PCR system.*

*For PCR Eleva application:   A new **license file** based on the new hardware must be ordered by using the Application License Order questionnaire. This questionnaire is included in the scope of the delivery of a PC and an appendix of this manual.*

## 4.2 DE-INSTALLING MEMORY FOR USIT

The PC is delivered with at least 2 x 512 MB memory modules in the basic configuration.
For the use as USIT PC one of the existing memory modules has to be to removed.
The operating system of a USIT is OS/2 and does not support RAM greater than 512 MB.

**Procedure:**
- Remove the cover of the PC.
- Locate the two DIMM connectors.
- Remove the outer memory module located on the DIMM 3 connector.

It would be great if you send the memory module back to your nearest service stock.

# 5. PROGRAMMINGS

Two configuration menus can be reached during the initialization of the PC:

- IBM Setup Utility   (BIOS configuration), F1
- Startup Device Menu, F12

**Note:**   After installing the application software it is recommended to program the Hard Disk 0 permanently as the First Startup Device instead of the CD/DVD-ROM.

## 5.1 STARTUP DEVICE MENU

Access:   Press F12 during startup of the computer in the phase 'System is starting …' is displayed.

The following list shows the programmed sequence of booting.
Select one of them in case the sequence shall be changed temporarily, e.g. for service purposes.

1. IDE CD:
2. IDE 0:
3. Diskette Drive A:

           <Enter Setup>

## 5.2 BIOS CONFIGURATION

Access:   Press F1 during startup of the computer in the phase 'System is starting …' is displayed.

The IBM Setup Utility shows the following selectable items:
- Main
- Devices
- Startup
- Advanced
- Security
- Power
- Exit

The contents may vary depending on the version of the BIOS and the model of the PC.
Those items of the menu that allow system settings are described below (BIOS version 2BKT40AUS):

**(1) Main**
    System summary:
    Product Data:
    UUID:
    System Time:                              (Enter local time)
    System Date:                              (Enter the date)

**(2) Devices**
    PS/2 Mouse:                               Enabled
                                              / Disabled        (as USIT)
    Diskette Drive:                           Enabled
    Serial Port Setup:
        Serial Port A:                        Enabled
            Base I/O address:                 3F8
            Interrupt:                        IRQ 4

Preview Unit/ Console

                Serial Port B:                          Enabled
                        Base I/O address:               2F8
                        Interrupt:                      IRQ 3
        USB Setup:
                USB Support:                            Enabled
                Front USB Ports:                        Enabled
                USB Device Support:                     Enabled
        Parallel Port Setup:
                Parallel Port:                          Disabled
        Video Setup:
                Active Video:                           [Intel (r) ...]
                        DVMT 3.0 Mode:                  [120 MB]
                Select Active Video:
                        DVMT 3.0 Mode:                  DVMT
                        Pre- Allocated Memory Size:     8 MB
                        Total Graphics Memory           128 MB
        IDE Drives Setup:
                Parallel ATA:                           Enabled
                Serial ATA:                             Enabled
                Native Mode Operation:                  Automatic
        Audio Setup:
                Audio Support:                          Disabled
        Network Setup:
                System Board Ethernet:                  Enabled
                PXE Boot Agent:                         Enabled          (only to see the MAC address)
                PXE Base Code:                          Disabled
                MAC Address                             [0011255E0827]   (example only)

**(3) Startup**
        Startup Sequence:
                1: IDE CD:  ……….                         (should be changed to IDE 0: after installing the SW)
                2: IDE 0:  ………
                3: Diskette Drive A:
                4: … 8:

                Excluded from boot order:
                : IDE 1
                : IDE 2
                : IDE 3
                : IDE 4
                : IDE 5
                : USB FDC
                : USB HDD
                : USB CDROM
                : PCI LAN:  …..
                : PCI SCSI

        Keyboard Numlock State:                         On
        Keyboard Speed:                                 Fast
        Disketteless Operation:                         Disabled
        Keyboardless Operation:                         Disabled
        Power On Self Test:                             Quick
        Power On Logo:                                  Disabled
        Option Keys Display:                            Enabled
        Option Keys Display Style:                      Normal
        Startup Device Menu Prompt:                     Enabled
        Automatic Startup Sequence:                     Enabled

**(4) Advanced**
        PCI Parity:                                     Enabled
        Plug and Play Operating System:                 No
        Legacy Free:                                    Disabled
        Hyper Threading:                                Disabled

Limit CPUID:                              Disabled
No Execute Technology:                    Disabled
C1 Enhanced Mode:                         Disabled
Processor 0 ID:                           [0F41]         (example only)
Microcode Revision                        [11/22/2004] (example only)
Fan Control:                              Normal

**(5) Security**

Access Host Protected Area:               Disabled
Adapter ROM Security:                     No
Security Profile by Device:
    IDE Controller:                       Enabled
    Diskette Drive Access:                Enabled
    Diskette Write Protect:               Disabled
    Password to request before booting:
        Removable Media Devices:          Not Required
        Hard Disk Devices:                Not Required
        Network Devices:                  Not Required
Remote Administration:
    Remote Administration:                Enabled
Set Passwords:
    User Password:
        Set User Password:                Enter
        Password Prompt:                  Dual
    Administrator Password:
        Set Administrator Password:       Enter
    Require Admin. pass. when Flashing:   No
    User password changeable by user:     No
    Require User password on warm boot:   No
    IDE Drive User Password:
        IDE Drive 0 Password:             Disabled
        IDE Drive 2 Password:             [Not Supported]
    IDE Drive Master Password:
        IDE Drive 0 Password:             Disabled
        IDE Drive 2 Password:             [Not Supported]
    Recover from Lost User Password:
        Recover IDE Drive 0:              Disabled
        Recover IDE Drive 2:              [Not Supported]
IBM TCG Feature Setup
    IBM TCG Security Feature:             Disabled
    Clear IBM TCG Security Feature:       No              (only visible if TCG is enabled)
IBM TCG Reporting Option
    BIOS ROM String Reporting:            Disabled
    ESCD Reporting:                       Disabled
    CMOS Reporting:                       Disabled
    NVRAM Reporting:                      Disabled
    SMBIOS Reporting:                     Disabled

**(6) Power**

ACPI BIOS  IRQ  :                         IRQ 9
ACPI Standby Mode:                        S3
Hard Disk Timeout:                        Disabled
After Power Loss:                         Last State
Automatic Power On:                                       (non-active)
    Wake on LAN:                          Disabled
    Serial Port Ring Detect:              Disabled
    PCI Modem Ring Detect:                Disabled
    Wake Up on Alarm:                     Disabled
    PCI Wake Up:                          Disabled

| | |
|---|---|
| Philips Medical Systems, DMC GmbH<br>BU General X-Ray - Operations<br>Roentgenstraße 24<br>22335 Hamburg,  Germany | FAX:        +49 40 5078 2398<br><br>E- mail:    ms.de.licensedesk.xray@philips.com |

## License Order for Application Software

Software licenses or keys e.g. for PCR Eleva Systems are generated on base of the unique hardware of a PC, the so-called fingerprint.
In case a PC has to be replaced in the field a new license file for the new hardware is needed.
The existing license file can be used at a new PC for 14 days.  A reload of the old license file on the new hardware to prolong the use of options of the application is not possible.

The customer is able to upload and activate the new license file by himself via a special user button.
If this is agreed with the customer a further visit of this site is not necessary.

The needed MAC address can be read out in the BIOS or via the service tool e.g. Field Service Framework (FSF). The name of the existing license file represents the MAC address.

**Please fill out this license order completely and send it to the FAX number or e- mail address given above. You will receive a new license file via E-mail and/or via Philips Intranet (InCentre/ Software Licenses) within 24 h on a normal business day (Germany):**

| | | |
|---|---|---|
| MAC address of the replaced PC:<br>(respectively the name of the license file in use) | | e.g. 00:C0:2D:06:08:D1 |
| MAC address of the new PC: | | |
| Date of installation of the new PC: | | (yyyy/mm/dd) |
| Code number of the ordered PC: | | e.g. 4512 131 81172 |
| Installed application software and version: | | e.g. PCR Eleva 1.1L1 |

| | |
|---|---|
| Site name: | |
| Location: | |
| Remarks: | |

| | |
|---|---|
| Engineer's e-mail address: | @philips.com<br>If filled out the license file will be sent to you! |
| Customer's e-mail address:<br>With permission of the customer only! | If filled out the license file will also be sent to the customer! |

| | | | |
|---|---|---|---|
| Engineer's identification: | | Date: | |